

Revised: 11/02/2021

SB 75-0028 R00 AIR SYSTEM - COMPRESSOR VARIABLE GEOMETRY ACTUATOR COMPONENTS (75-30-01) - MASTER COMPRESSOR VARIABLE GEOMETRY ACTUATOR AND SLAVE COMPRESSOR VARIABLE GEOMETRY ACTUATOR ONE-TIME INSPECTION

Issued: 11/02/2021

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#### 1. PLANNING INFORMATION

### A. <u>Effectivity</u>

#### \* \* \* CF34-8C1/-8C5/-8C5B1

This Service Bulletin is applicable to these CF34-8C engines:

\*CF34-8C engines, serial numbers 965105 through 965108, 965201 through 965999, 194101 through 194110, 194201 through 194999, 195101 through 195872.

NOTE: If the suspect engines have been previously inspected for corrosion on the master compressor variable geometry actuator and slave compressor variable geometry actuator according to GE recommendations within the last 2 months, this Service Bulletin is not applicable.

These serial numbers are the best available data.

The master compressor variable geometry actuator VIN 1211508-005 (P/N 4120T02P05) and slave compressor variable geometry actuator VIN 1211509-005 (P/N 4120T03P05) are affected by this Service Bulletin.

### B. <u>Description</u>

This Service Bulletin provides instructions to conduct a one-time inspection of the affected master compressor variable geometry actuator and slave compressor variable geometry actuator aimed to identify possible rod end corrosion/seizure.

### C. Compliance

Category 1

GE recommends that you do this Service Bulletin as soon as possible but no later than the inspection thresholds listed below:

- (1) For engines installed on the aircraft parked outdoors, accumulating more than 250 days in the last 24 months in any location within a 10 mile (16 km) distance from a salt-water coastline, do as follows:
  - \*On one engine per aircraft, do an inspection of the master compressor variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402) before 30 flight hours or within five calendar days of flight operation from the issue date of this Service Bulletin, whichever comes first.
  - \*On the sister engine, do an inspection of the master compressor variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402) before 350 flight hours or within 2 months of flight operation from the issue date of this Service Bulletin,

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whichever comes first.

- (2) For engines installed on the aircraft parked outdoors, accumulating more than 100 days but less than or equal to 250 days in the last 24 months in any location within a 10 mile (16 km) distance from a salt-water coastline, do as follows:
  - \*On one engine per aircraft, do an inspection of the master compressor variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402) before 200 flight hours or within 35 calendar days of flight operation from the issue date of this Service Bulletin, whichever comes first.
  - \*Do an inspection of the sister engine master compressor variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402) before 800 flight hours or within 5 months of flight operation from the issue date of this Service Bulletin, whichever comes first.
- NOTE: For engines currently on short-term or long-term preservation installed on parked aircraft at any location within a 10 mile (16 km) distance from a salt-water coastline that have not resumed revenue service, it is recommended to do this Service Bulletin prior to returning to regular revenue service.
- NOTE: For spare engines stored outdoors at any location within a 10 mile (16 km) distance from a salt-water coastline that have not resumed revenue service, it is recommended to do this Service Bulletin prior to returning to regular revenue service.

NOTE: Parking day is counted as 24 hours without engine operation.

Impact A

This recommendation is to address a condition that may affect Flight Safety.

NOTE: This Service Bulletin can be accomplished on wing or in shop.

This Service Bulletin is offered to improve the reliability or performance of your GE product, or to help prevent the occurrence of the event or condition described in this Service Bulletin. If the operator elects not to participate in the bulletin, that decision will be taken into consideration by GE in evaluating future product performance issues that may arise in the operator's fleet.

#### D. <u>Concurrent Requirements</u>

None.

### E. Reason

(1) Objective:

To identify possible seizure on the master compressor variable geometry actuator (SIN 30401) rod end and slave compressor variable geometry actuator (SIN 30402) rod end that could result in an In Flight Shutdown due to a broken master compressor variable geometry actuator (SIN 30401) rod end and slave compressor variable geometry actuator (SIN 30402) rod end.

(2) Condition:

Some operators have experienced master compressor variable geometry actuator (SIN 30401) rod end and slave compressor variable geometry actuator (SIN 30402) rod end fracture due to rod end ball bearing seizure caused by corrosion accumulation in the rod end joint due to prolonged outdoor exposure at locations near a salt-water coast. Corrosion and seizure have been observed on the master compressor variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402) on both engines mounted on the aircraft that were parked and exposed to salt-water coastal environments for long periods of time. This condition led to loss of thrust control and In-Flight Shutdown event.

(3) Cause:

The motion restriction of the rod end can impact the master compressor variable geometry actuator rod end (SIN 30401) and slave compressor variable geometry actuator (SIN 30402) mechanism motion and cause stresses over the rod end threaded section of the master compressor variable geometry actuator rod end (SIN 30401) and slave compressor variable geometry actuator (SIN 30402), generating cracks that can lead to rod end fracture.

(4) Inspection:

The master compressor variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402) corrosion inspection is aimed to identify possible rod end seizure and prevent possible rod end fracture.

(5) Substantiation:

Substantiation is by fleet experience.

### F. Approval

This Service Bulletin contains no modification information that revises the approved configuration and therefore does not require FAA or regulatory approval.

#### G. Manpower

After you get access to the master compressor variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402), you will need approximately 2 man-hours to do the inspection portion of this Service Bulletin.

### H. Weight and Balance

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Weight and balance are not changed.

I. References (Use the latest version of these documents)

GEK 9250, Commercial Engine Standard Practices Manual (SPM)

GEK 105091-1, CF34-8C Line Maintenance Manual (LMM)

GEK 105092, CF34-8C Illustrated Parts Catalog (IPC)

J. Publications Affected

None.

K. <u>Interchangeability</u>

Not applicable.

L. <u>Software Accomplishment Summary</u>

Not applicable.

# 2. MATERIAL INFORMATION

#### A. <u>Material - Price and Availability</u>

- (1) Parts necessary to do this Service Bulletin: None.
- (2) Other Spare Parts:

Part Number	Qty/ Eng	Part Name	Unit (\$) Price	Pkg Qty	Lead Time Days
J814P039A	(2)	Bolt, Double Hexagonal Head	Quote	(-)	Quote
2018T39P01	(2)	Washer	Quote	( - )	Quote
J1212P04	(2)	Nut, Self- Locking	Quote	( - )	Quote
VIN 1211508-005* (4120T02P05)	(1)	Actuator, Master Compressor Variable Geometry	NP	( - )	
VIN 1211509-005* (4120T03P05)	(1)	Actuator, Slave Compressor Variable Geometry	NP	( - )	
4074T29P02	(1)	Bolt Assembly, Expandible Bushing	Quote	( - )	Quote
J1092P03	(1)	Nut, Self- Locking	Quote	( - )	Quote
705B734P30	(1)	Washer, Flat	Quote	( - )	Quote
3044T63P03	(2)	Washer, Teflon Flat	Quote	( - )	Quote

\*Part not supplied by GE Engine Services Distribution L.L.C. To procure parts, contact the following:

AAR Worldwide Sales Team:

 ${\tt E-mail: aararkwinsales@aarcorp.com}$ 

E-mail per Sales Team Region:

 ${\tt Americas} \ {\tt E-mail:} \ {\tt aararkwinsalesamericas@aarcorp.com}$ 

Europe, Middle East, and Africa (EMEA) E-mail: aararkwinsalesemea@aarcorp.com

Asia Pacific Region (APAC) E-mail: aararkwinsalesapac@aarcorp.com

Aircraft on Ground (AOG) Team Support 24/7:

AOG E-mail: aog@aarcorp.com

NP = Not Provisioned

#### NOTE: Prices are provided for planning purposes and are subject to change.

(3) Consumables:

Code Number	Description
C04-035	General Solvent (isopropyl alcohol)
C10-182	Cloth, Cleaning for Aircraft Structural (clean cloth)

#### B. <u>Industry Support Information</u>

None.

C. Configuration Chart

None.

D. Parts Disposition

None

### E. Tooling - Price and Availability

Code Number Description

-- Soft Bristle Brush

## 3. <u>ACCOMPLISHMENT INSTRUCTIONS</u>

- A. General
  - (1) For the master compressor variable geometry actuator (SIN 30401), do as follows:
    - (a) Disconnect the master compressor variable geometry actuator (SIN 30401) rod end side

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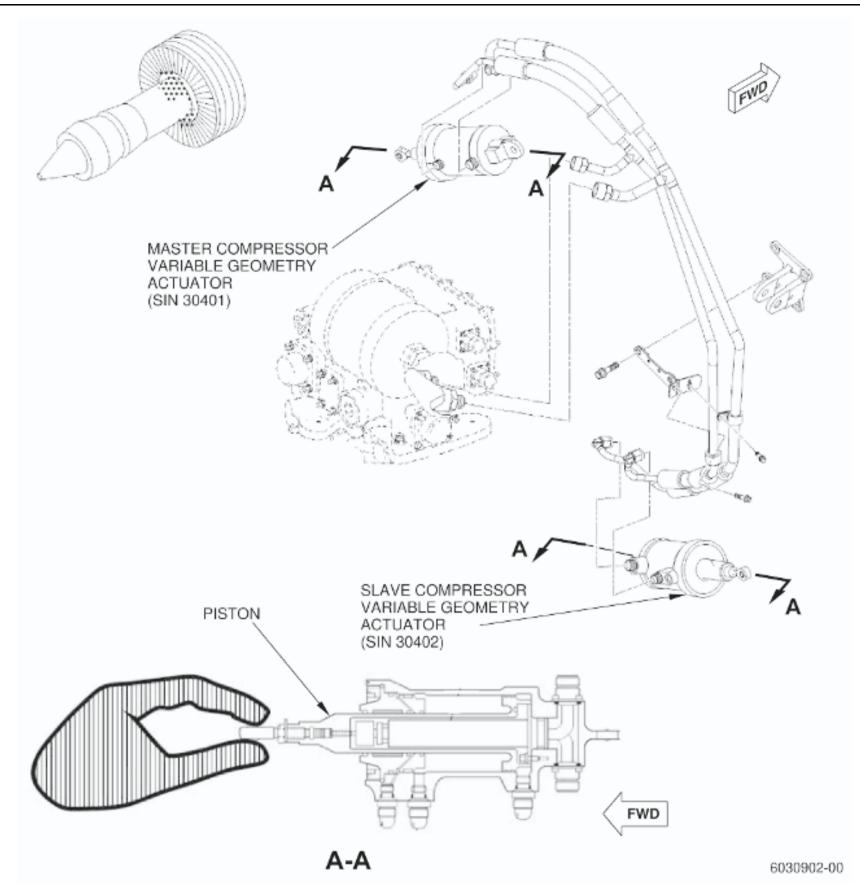
- only. Refer to GEK 105091-1, 75-00-00, SPECIAL PROCEDURES 005, Subtask 75-00-00-050-005
- (b) Remove the self-locking nut, washer, double hexagonal head bolt (bolt), and do as follows:
  - $\underline{1}$  If you cannot remove the rod end bolt easily, take pictures of the assembly and report findings to GE. Refer to Figure 1.
- (c) Keep the master compressor variable geometry actuator (SIN 30401) head-end side assembled to the engine bellcrank.
- (d) Clamp the two sides of the rod end ball bearing with your index and thumb while you firmly attach the position of the master compressor variable geometry actuator (SIN 30401) with the other hand. Refer to Figure 2.
- (e) Try to turn the ball bearing on its axis (clockwise or counterclockwise). Refer to Figure 3.
- (f) Try to turn the ball bearing in the master compressor variable geometry actuator (SIN 30401) axis while you hold the master compressor variable geometry actuator (SIN 30401) flats with a wrench. Refer to Figure 4 and do as follows:
  - If the rod end ball bearing turns freely and does not present signs of visible corrosion, refer to paragraph 4., APPENDIX A, Table 1.
  - 2 If the rod end ball bearing does not turn freely or presents signs of visible corrosion, refer to paragraph 4.,  $\frac{\text{APPENDIX}}{\text{APPENDIX}} = \frac{A}{A}$ , Table 1.
- (g) Insert the bolt in the rod end ball bearing and tighten the self-locking nut with your hands. Try to move the ball bearing with a bolt to aid movement and do as follows:
  - $\underline{l}$  If the ball bearing turns with signs of friction or if a bolt is necessary to aid movement, remove the bolt.
  - 2 Refer to paragraph 4., <u>APPENDIX A</u>, Table 1. Send the inspection report specified in Figure 1 to GE.
- (h) If the ball bearing is seized, do as follows:
  - Refer to paragraph 4.,  $\underline{APPENDIX} \underline{A}$ , Table 1. Send the inspection report specified in Figure 1 to GE.
- (i) Install back the removed bolt, washer, and self-locking nut. Refer to GEK 105091-1, 75-00-00, SPECIAL PROCEDURES 005, Subtask 75-00-00-450-005.
- (j) If the master compressor variable geometry actuator (SIN 30401) inspection is not satisfactory and you repaired the master compressor variable geometry actuator (SIN 30401), send the master compressor variable geometry actuator (SIN 30401) time since overhaul (TSO)/cycle since overhaul (CSO) in addition to time since new (TSN)/cycle since new (CSN) in the inspection report specified in Figure 1.
- (2) For the slave compressor variable geometry actuator (SIN 30402), do as follows:
  - (a) Disconnect the slave compressor variable geometry actuator (SIN 30402) rod end side only. Refer to GEK 105091-1, 75-00-00, SPECIAL PROCEDURES 006, Subtask 75-00-00-050-006.
  - (b) Remove the self-locking nut, washer, double hexagonal head bolt (bolt), and do as follows:
    - $\underline{1}$  If you cannot remove the rod end bolt easily, take pictures of the assembly and report findings to GE. Refer to Figure 1.
  - (c) Keep the slave compressor variable geometry actuator (SIN 30402) head-end side assembled to the engine bellcrank.
  - (d) Take pictures of the assembly and provide them to  ${\tt GE.}$
  - (e) Clamp the two sides of the rod end ball bearing with your index and thumb while you firmly attach the position of the slave compressor variable geometry actuator (SIN 30402) with the other hand. Refer to Figure 2.
  - (f) Try to turn the ball bearing on its axis (clockwise or counterclockwise). Refer to Figure 3.
  - (g) Try to turn the ball bearing in the slave compressor variable geometry actuator (SIN 30402) axis while you hold the slave compressor variable geometry actuator (SIN 30402) flats with a wrench. Refer to Figure 4 and do as follows:
    - 1 If the rod end ball bearing turns freely and does not present signs of visible corrosion, refer to paragraph 4., APPENDIX A, Table 1.
    - 2 If the rod end ball bearing does not turn freely or presents signs of visible corrosion, refer to paragraph 4.,  $\frac{\text{APPENDIX}}{\text{APPENDIX}} = \frac{A}{A}$ , Table 1.
  - $(\mbox{\sc h})$  Insert the bolt in the rod end ball bearing and tighten the self-locking nut with your hands. Try to move
    - $\underline{\mathbf{1}}$  If the ball bearing turns with signs of friction or if a bolt is necessary to aid movement, remove the bolt.
    - 2 Refer to paragraph 4., <u>APPENDIX A</u>, Table 1. Send the inspection report specified in Figure 1 to GE.
  - (i) If the ball bearing is seized, do as follows:
    - Refer to paragraph 4.,  $\underline{APPENDIX} \underline{A}$ , Table 1. Send the inspection report specified in Figure 1 to GE.
  - (j) Install back the removed bolt, washer, and self-locking nut. Refer to GEK 105091-1, 75-00-00, SPECIAL PROCEDURES 006, Subtask 75-00-00-450-006.

- (k) If the slave compressor variable geometry actuator (SIN 30402) inspection is not satisfactory and you repaired the slave compressor variable geometry actuator (SIN 30402), send the slave compressor variable geometry actuator (SIN 30402) TSO/CSO in addition to TSN/CSN in the inspection report specified in Figure 1.
- (3) For light surface corrosion cleaning procedure of the master compressor variable geometry actuator (SIN 30401) rod end, slave compressor variable geometry actuator (SIN 30402) rod end, and rod end ball bearing, do as follows:
  - (a) Disassemble the rod end ball bearing from the rod end.
  - WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF THIS PRODUCT.
  - (b) Clean the ball bearing and the full rod end surface with isopropyl alcohol ( ${\rm C04-035}$ ) and a soft bristle brush.
  - (c) Clean with a clean cloth (C10-182).
  - (d) Assemble the ball bearing into the master compressor variable geometry actuator (SIN 30401) rod end and slave compressor variable geometry actuator (SIN 30402) rod end.
  - (e) Try to turn the ball bearing on its axis (clockwise or counterclockwise). Refer to Figure 3.
  - (f) Try to turn the ball bearing in the master compressor variable geometry actuator (SIN 30401) axis and slave compressor variable geometry actuator (SIN 30402) axis while you hold the master compressor variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402) flats with a wrench. Refer to Figure 4 and do as follows:
    - If the rod end ball bearing turns freely and does not present signs of visible corrosion, refer to paragraph 4.,  $\frac{APPENDIX A}{A}$ , Table 1.
    - 2 If the rod end ball bearing does not turn freely or presents signs of visible corrosion, refer to paragraph 4.,  $\frac{\text{APPENDIX}}{\text{APPENDIX}}$  Table 1.
  - (g) Insert the bolt in the rod end ball bearing and tighten the self-locking nut with your hands. Try to move the ball bearing with a bolt to aid movement and do as follows:
    - If the ball bearing turns with signs of friction or if a bolt is necessary to aid movement, remove the bolt.
    - 2 Refer to paragraph 4., <u>APPENDIX A</u>, Table 1. Send the inspection report specified in Figure 1 to GE.
  - (h) If the ball bearing is seized, do as follows:
    - Refer to paragraph 4., <u>APPENDIX A</u>, Table 1. Send the inspection report specified in Figure 1 to GE.

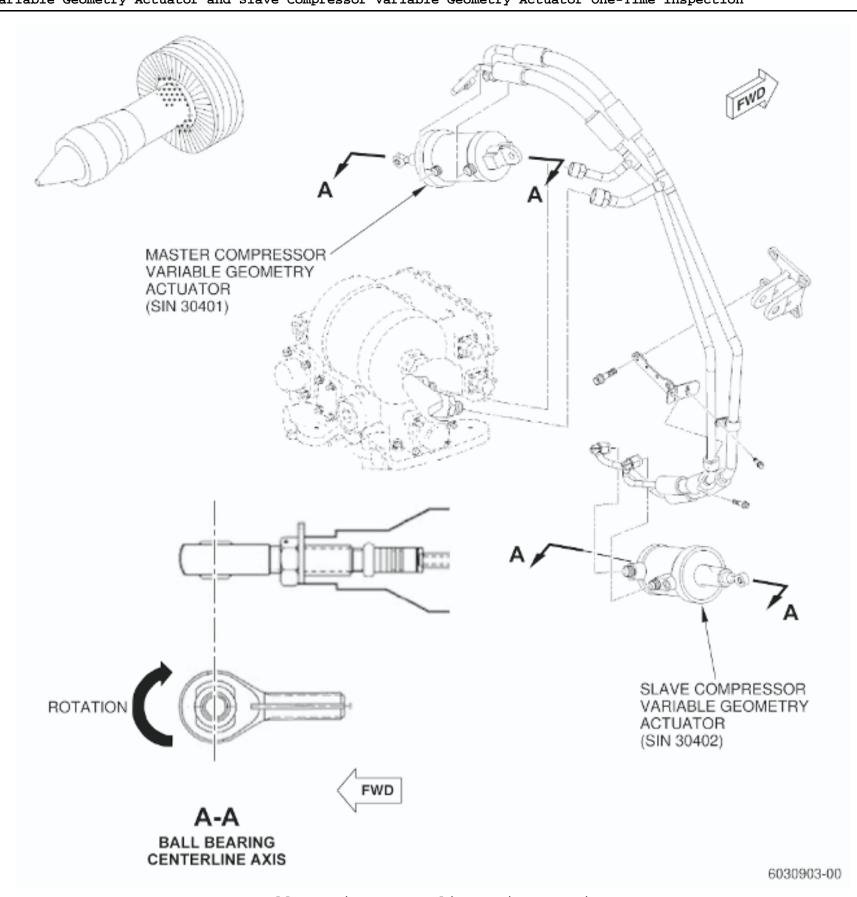
INSPECTION REPORT FOR CEAL OC OID 75 ASSO				
INSPECTION REPORT FOR CF34-8C S/B 75-0028  NOTE: CONTACT GE AVIATION FLEET SUPPORT IF THERE ARE ANY FINDINGS.  E-MAIL (U.S.A.): AVIATION.FLEETSUPPORT@GE.COM				
E-MAIL (CHINA AND ASIA): AVIATION.FLEETSUPPORT.CN@GE.CO	М			
AIRCRAFT TAIL NUMBER				
ENGINE POSITION				
ENGINE SERIAL NUMBER (ESN)				
ENGINE TIME SINCE NEW (ETSN)				
ENGINE TIME SINCE OVERHAUL (ETSO)				
DATE				
ENGINE MODEL				
SLAVE COMPRESSOR VARIABLE GEOMETRY ACTUATOR INSPECTIO	N			
SLAVE COMPRESSOR VARIABLE ACTUATOR SERIAL NUMBER				
SLAVE COMPRESSOR VARIABLE ACTUATOR TSN/TSO				
INSPECTIONS PROCEDURE	OBSERVATIONS			
STEP 1 RESULTS: ARE THERE VISUAL INDICATIONS OF CORROSION ANYWHERE IN THE ROD END AND BALL BEARING JOINT?	YES	NO		
STEP 2 RESULTS: ARE THERE ANY SIGNS OF SEIZURE OR CORROSION ON ROD END BEARINGS?	YES	NO		
IF THERE ARE CORROSION FINDINGS ON THE JOINT AFTER INSPECTIONS ON STEP 1 OR 2, SEND PICTURES OF THE CORROSION LOCATIONS.				
MASTER COMPRESSOR VARIABLE GEOMETRY ACTUATOR INSPECTION	ON			
MASTER COMPRESSOR VARIABLE ACTUATOR SERIAL NUMBER				
MASTER COMPRESSOR VARIABLE ACTUATOR TSN/TSO				
INSPECTION PROCEDURE	OBSERV	ATIONS		
STEP 1 RESULTS: ARE THERE VISUAL INDICATIONS OF CORROSION ANYWHERE IN THE ROD END AND BALL BEARING JOINT?	YES	NO		
STEP 2 RESULTS: ARE THERE ANY SIGNS OF SEIZURE OR CORROSION ON ROD END BEARINGS?	YES	NO		
IF THERE ARE CORROSION FINDINGS ON THE JOINT AFTER INSPECTIONS ON STEP 1 OR 2, SEND PICTURES OF THE CORROSION LOCATIONS.				
ENGINE HISTORY				
SEND THE INFORMATION THAT FOLLOWS	OBSERV			
HAS THIS ENGINE BEEN FLYING FREQUENTLY IN BETWEEN COASTAL CITIES OR SALINE ENVIRONMENTS?	YES	NO		
IF YES, FOR HOW LONG? (DAYS, MONTHS, OR YEARS)				
HAS THIS ENGINE BEEN RECENTLY STORED OUTDOORS IN A COASTAL LOCATION?	YES	NO		
IF YES, FOR HOW LONG? (DAYS, MONTHS, OR YEARS)				
HAS THIS ENGINE BEEN INSTALLED ON A PARKED AIRCRAFT OUTDOORS IN A COASTAL LOCATION?	YES	NO		
IF YES, FOR HOW LONG? (DAYS, MONTHS, OR YEARS)				
IF YES, HOW WAS THE AIRCRAFT PARKING CONDITION? (HANGAR, PARKWAY, ETC.)				

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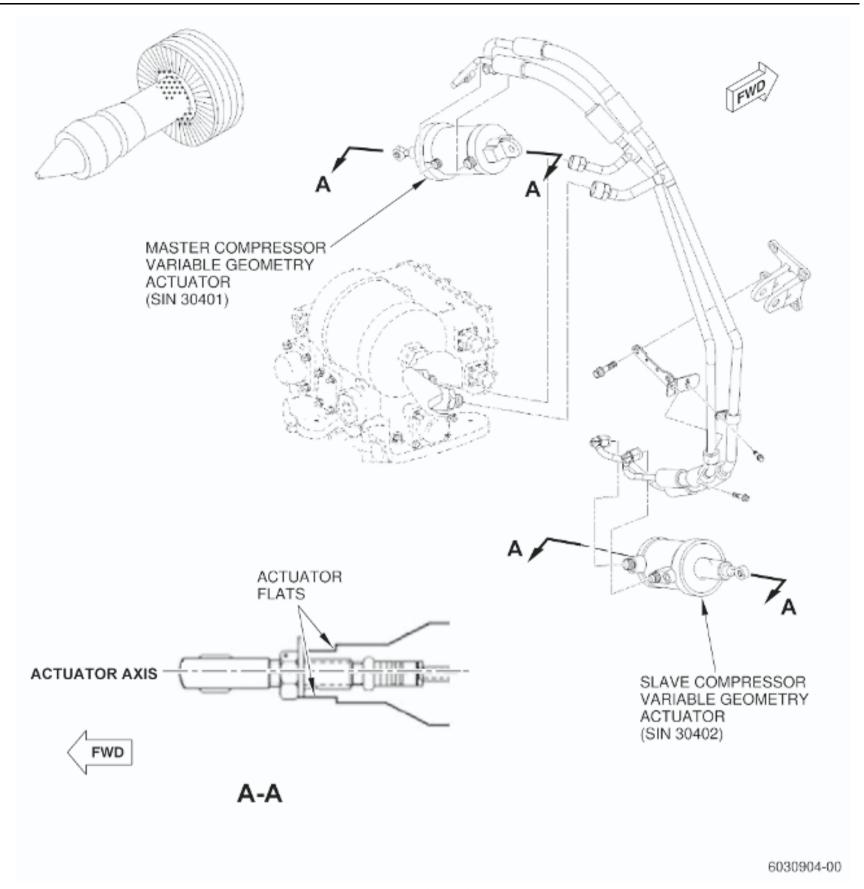
Inspection Report Figure 1



Ball Bearing Hand Clamping Figure 2



Ball Bearing Centerline Axis Rotation Figure 3



Ball Bearing Rotation in Actuator Axis
Figure 4

### 4. APPENDIX - A

Table 1. Rod End and Rod End Ball Bearing Corrosion Inspection

Inspection	Serviceability Limits	Remarks	
	Ball bearing free motion, no corrosion.	Serviceable.	
	Light surface corrosion and ball bearing free motion.	Clean as specified in step 3.A.(3). If the light corrosion can be removed as specified in step 3.A.(3) and ball bearing has free motion, do an inspection at 800 flight hours again. Report any finding of this inspection to GE. Otherwise, not serviceable.	
Corrosion	Visible corrosion, ball bearing motion with bolt aid.	Not serviceable. Remove and replace the master compressor	

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		variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402).
	Ball bearing seized.	Not serviceable. Remove and replace the master compressor variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402).
Pitting	Ball bearing or rod end surfaces.	Not serviceable. Remove and replace the master compressor variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402).
Nicks and scratches or galling	Ball bearing and rod end mating surfaces.	Not serviceable. Remove and replace the master compressor variable geometry actuator (SIN 30401) and slave compressor variable geometry actuator (SIN 30402).

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